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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,770	08/06/2003	Shigeo Ohashi	500.40473CX1	6841
20457	7590	03/07/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP			CHANG, YEAN HSI	
1300 NORTH SEVENTEENTH STREET			ART UNIT	PAPER NUMBER
SUITE 1800				
ARLINGTON, VA 22209-9889			2835	

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/634,770	OHASHI ET AL.	
	Examiner Yean-Hsi Chang	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 26 January 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-24 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 06 August 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on Jan. 26, 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,611,425 B2 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al. (US 5,764,483).

Ohashi teaches an electronic apparatus (fig. 1) having a liquid cooling system, comprising: a main body having a housing (10, fig. 1) mounting parts including a plural number of electronic parts (shown in fig. 1) therein, a display device (8, fig. 1) having a housing (10', fig. 1), a keyboard (4, fig. 1), a heat-receiving member (14, fig. 1) being thermally connected with a semiconductor element (12, fig. 1) as a heat generating

member among said electronic parts, and having a first flow passage (shown in fig. 2, not labeled) in which a liquid flows through (see col. 3, line 66 through col. 4, line 1), a heat-dissipating member (16, fig. 1) being disposed on a wall of at least one of said housings of said main body and said display device (shown in fig. 1), so as to dissipate heat therefrom into an outside air atmosphere, and having a second flow passage (36, fig. 4) in which the liquid flows through, a tube (18) for connecting said first flow passage of said heat-receiving element and said second flow passage of said heat-dissipating element (shown in fig. 4), and a heat transfer device including therein a liquid circulator (40, fig. 4) for circulating said liquid through said first and second flow passages between said heat-receiving element and said heat-dissipating element (claims 1, 6, 9, 14, 17 and 22); wherein said display is pivotally supported on said main body (shown in fig. 1) and a portion of said tube is made of a flexible tube (18 being flexible, see col. 3, lines 51-52) (claims 4, 12, and 20); and wherein said liquid circulator has a thickness less than a height of said main body (if it's to be mounted in the main body) (claims 5, 13 and 21).

Ohashi fails to teach said liquid circulator being configured to produce a minimized liquid circulating flow rate which is a flow rate sufficient to substantially prevent overheating of said heat generating member and in which a difference between a maximum temperature and a minimum temperature of said circulating liquid at least in said first and second flow passages is not greater than a difference between an upper limit temperature of said heat generating member and an outside air temperature of the electronic apparatus as stated in claims 1, 6, 17 and 22; or in which at least 10% of a

sum of a temperature difference between the semiconductor element (or heat generating member) and said heat receiving element (or member) and a temperature difference between said heat-dissipating element (or member) and an outside air temperature of said electronic apparatus is obtained as stated in claims 9 and 14.

Under a normal operating condition, the liquid cooling system claimed is used to remove heat from the heat generating member inside the electronic apparatus to the outside air of the electronic apparatus. By Law of Physics, the temperature of the heat generating member is usually equal or higher than the temperature of the circulating liquid of the cooling system which is usually equal or higher than the outside air temperature. That means the difference between a maximum temperature and a minimum temperature of a circulating liquid in the flow passages is always not greater than a difference between the temperature of a heat generating member and an outside air temperature of the electronic apparatus. An electronic heat generating member in an electronic apparatus usually has an upper limit working temperature; and an upper limit temperature of an working environment for the electronic apparatus is usually specified. With these two constant temperatures given, there would not be much tolerance for selecting a suitable liquid circulator to produce a minimized liquid circulating flow rate for achieving such a requirement, or, more specifically, a 10% or more of a sum of a temperature difference between the heat generating member and the heat receiving member and a temperature difference between the heat-dissipating member and an outside air temperature of said electronic apparatus is obtained. Such a liquid circulator may be able to produce a liquid circulating flow rate within a limit ranging from

120 μ L/sec. to 1200 μ L/sec. Therefore, it would have been obvious to one having ordinary skill in the art to make such a selection from the on-the-shelf liquid circulators having minimum form factors for the cooling system in an electronic apparatus.

Response to Arguments

4. Applicant's arguments filed Jan. 26, 2005 have been fully considered but they are not persuasive. Applicants are respectfully suggested to find answers for the arguments in the paragraphs hereinabove.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yean-Hsi Chang whose telephone number is (571) 272-2038. The examiner can normally be reached on 07:30 - 16:00.

If attempts to reach the examiner by telephone are unsuccessful, the Art Unit phone number is (571) 272-2800, ext. 35. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431 for regular communications and for After Final communications. There are RightFax numbers and provide the fax sender with an auto-reply fax verifying receipt by the USPTO: Before-Final (703-872-9318) and After-Final (703-872-9319).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-8558.

Yean-Hsi Chang
Primary Examiner
Art Unit: 2835
March 3, 2005



YEAN-HSI CHANG
PRIMARY EXAMINER